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ABSTRACT

This paper summarizes the findings of a national survey conducted for the Ministry of Education, Science, and Culture in 1986 to determine the kinds of audiovisual equipment available in Japanese schools, together with the rate of diffusion for the various types of equipment, the amount of teacher participation in training for their use, and the quantity of locally produced materials. Equipment covered by the survey included television receivers, tape recorders, radios, slide projectors, building-wide address systems, overhead projectors, record players, microcomputers, videotape recorders, and compact disc players. A brief outline reports the average number and diffusion rates of the various types of audiovisual equipment in the schools from kindergarten through senior high school. Short discussions are then presented on the following topics: diffusion rates and average numbers of major types of audiovisual equipment; trends in diffusion rates of video equipment, compact disc players, and microcomputers; utilization of audiovisual media and materials; frequency of utilization; utilization by subject area; participation in training seminars on educational technology and/or microcomputers; and local production of slides, overhead transparencies, videotapes, audiotapes, and computer software. Summaries of the data are presented in 13 tables and two figures. (CGD)

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Audiovisual Facilities in Schools in Japan Today

——from The Ministry of Education, Science and Culture's 1986 Survey on Audiovisual Media——

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I. OUTLINE

1. Audiovisual equipment already highly diffused in the schools include TV receivers, tape recorders, radios, slide projectors, building-wide public address systems, overhead projectors and record players.

2. Since the diffusion rate for TV receivers at the elementary and the junior high school levels has reached almost 100 %, nearly every school today has TV. The typical elementary school with TV has 18 sets, the typical junior high school has 11 and the typical senior high school has 9. It also appears that although the average number of color TV receivers is increasing, that of black and white TV receivers is on the decline.

3. Almost every school today also has one or more tape recorders. The diffusion rates for cassette tape recorders with built-in radios is particulary high. It also appears that the higher the level of schooling the more tape recorders available in each school. The average senior high school today owns 16 tape recorders.

4. With the exception of the kindergarten level (with a diffusion rate of only 72%), nearly every school today also has one or more overhead projectors. The average number of overhead projectors per school is highest at the elementary level(12), second at the junior high school level(11) and third at the senior high school level(6).

5. Slide projectors are the most common of all the various types of projectors available, with 99% of the senior high schools, 98% of the elementary schools and 97% of the junior high schools possessing such equipment. The diffusion rates for 8mm and 16mm projectors are also high at the upper levels of education; 96% of the senior high schools own one or more 16mm projectors. The diffusion rates for 8mm projectors, however, appears to be dropping at all levels of shcooling.

6. Diffusion rates for videotape recorders are also higher at the upper levels of schooling. In 1986, 99% of all senior high schools had at least one videotape recorder and the average senior high school owned 5 such recorders. Cassette videotape recorders have become popular at all levels. In 1986, 89% of the elementary schools and 94% of the junior high schools had one or more cassette videotape recorders.

7. Compared to the previous, academic year 1983 survey, diffusion rates for color videocameras increased by at least 10% at the elementary and junior high school levels. At 85%, the diffusion of color plus black and white videocameras is highest at the senior high school level.

8. Diffusion of microcomputers has increaed most at the senior high school level. Today, 86% of the senior high schools, 18% of the junior high schools and 4% of the elementary schools possess one or more microcomputers.

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II. DIFFUSION RATES, AVERAGE AMOUNTS

Table One
Diffusion Rate for
Major Items of Audiovisual Education Equipment

Item	Schools
16mm Projectors	60.8
Slide Profectors	96.3
Still Cameras	79.7
Overhead Projectors	95.5
Building-wide Public Address Systems	95.9
Television Revceivers (color and B&W)	99.1
Videotape Recorders(All types)	85.7
Tape Recorders(Audio)(All types)	98.2
Record Players(With & w/out radios)	94.2
Radio Receivers(Separate & built-in)	98.0

As Table 1 shows here, TV receivers (B&W plus color) have the highest diffusion rate, nearly 100%. This is followed by tape recorders, radio revceivers and slide projectors. Let us see the diffusion rates and average amounts on hand for certain major items of audiovisual equipment in kindergartens, elementary schools, junior and senior high schools.

III. DIFFUSION IN SCHOOLS

The most common audiovisual media available at the kindergarten level are TV receivers (color) at 97% and even higher diffusion if included B&W ; 98%. Radios and tape recorders are also widely diffused.

At the elementary school level, TV receivers, overhead projectors, radio receivers and tape recorders have the high diffusion rate (nearly 100%). Average quantities of selected items per facility are

TV receivers	18
Overhead projectors	12
Radio receivers	11

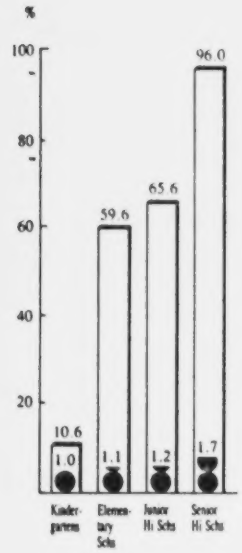
At the junior high school level, the diffusion rate is almost the same as those in elementary school. Average quantities per facility are

TV receivers	11
Overhead projectors	11
Tape recorders	10

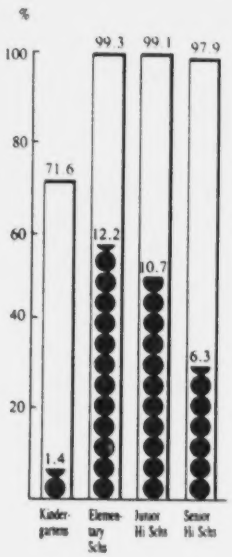
At the senior high school level, highly diffused items are the same as those in elementary and junior high school. Besides videotape recorder is very common in senior high school. Average quantities of tape recorders per facility are 16, and microcomputers have the highest diffusion in senior high schools and its diffusion rate is 86%, average quantities are 13.

Figure One

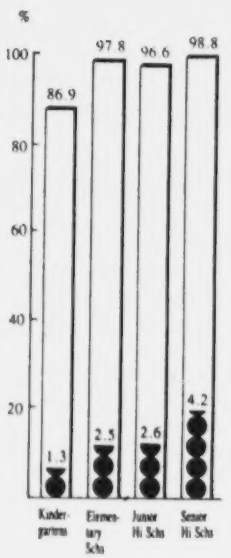
Diffusion of 16 mm Projectors



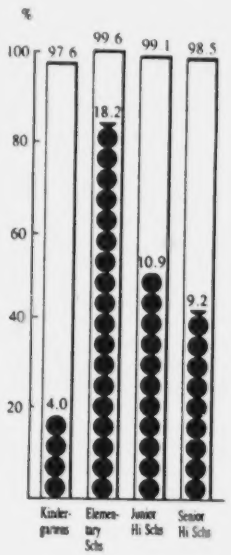
Diffusion of Overhead Projectors



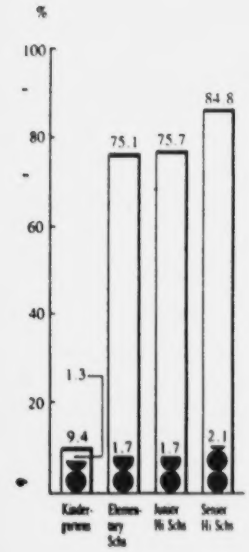
Diffusion of Slide Projectors



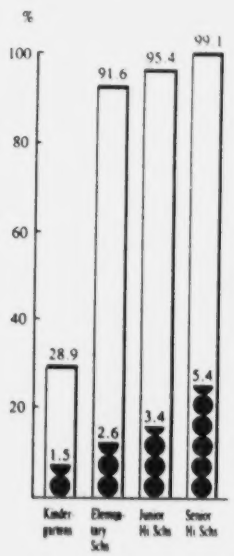
Diffusion of Television Receivers (Color and B&W)



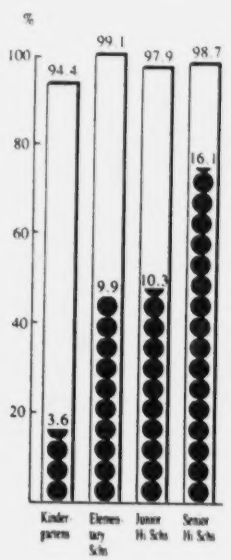
Diffusion of Video Cameras (Color and B&W)



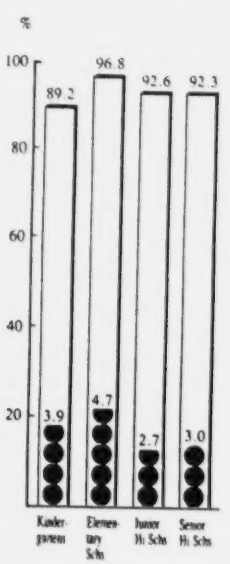
Diffusion of Videotape Recorders (All types)



Diffusion of Tape Recorders (All types)



Diffusion of Record Players



IV. TRENDS (Changes in Diffusion Rates)

Those audiovisual media which, between the previous survey (as of May 1, 1983) and the current one, had increases in diffusion rates of 10% or more are shown in Table 2. The greatest increase in diffusion rate (from 56.4% to 86.4%, or 30%) was seen for microcomputers at the senior high school level. On the other hand, the decreases in diffusion rate was seen for TV receivers (B&W) and tape recorders (open reel).

About average quantity in each facility, TV receivers (color) and tape recorders (cassette, with radio) are increasing at the elementary, junior and senior high schools. These equipments are increasing in quantity after having already nearly 100% in diffusion as the previous survey. It is remarkable that microcomputers have increased at 8.4 at the senior high and 1.7 even at the junior high school in average ownership. We can see microcomputers at junior and senior high school are rapidly diffused both in diffusion rate and average quantity.

Table Two
Increases in Diffusion Rates for
Selected Items of Audiovisual Education Equipment

Facility	Item	1983 Diffusion Rate	1986 Diffusion Rate	Increase
Kindergarten	VTR (Cassette/Color)	13.2	27.3	14.1
Elementary School	Videocamera (Color)	58.4	73.2	14.8
	VTR (Cassette/Color)	72.9	89.3	16.4
Junior High School	Videocamera (Color)	62.0	73.0	11.0
	VTR (Cassette/Color)	83.0	93.6	10.6
	Microcomputer	3.1	17.6	14.5
Senior High School	Microcomputer	56.4	86.4	30.0
Public Halls	VTR (Cassette/Color)	47.1	58.3	11.2

V. DIFFUSION AND POSSESSION OF NEW MEDIA (MICROCOMPUTER, etc.)

Microcomputer diffusion and possession rates, by facility, are shown in Table 3. Microcomputer diffusion, at 86%, is greatest at the senior high school level. It is only 18% at the junior high school level and a very low 4% at the elementary school level. Microcomputer ownership (12.6) is also highest at the senior high school level.

The distribution curve for microcomputers at the senior high school level, taken from the 1983 survey, is shown as a bar graph in Figure 2. The vertical axis indicates the percentage of schools while the horizontal axis shows the number of microcomputers possessed. As shown here, while 18% of the senior high schools possessing one or more microcomputers have only one, 47% of them have 5 or more and 20% have 21 or more while 1.7% in the previous survey.

The 1986 survey was the first time that videodisk and compact disk players were included. As shown in Table 4, in all types of institutions, the diffusion rates for these new media are still less than 10%, which have to be improved in the future.

Table Three

Microcomputer Diffusion Rates and Quantities on Hand by Facility

Facility	Diffusion Rate	Average Quantity on Hand
Kindergartens	0.64%	1.50
Elementary Schools	4.32	3.02
Junior High Schools	17.59	3.03
Senior High Schools	86.43	12.57

Figure Two

Distribution of Microcomputers within the Senior High Schools (Percentage of schools with indicated number of microcomputers)

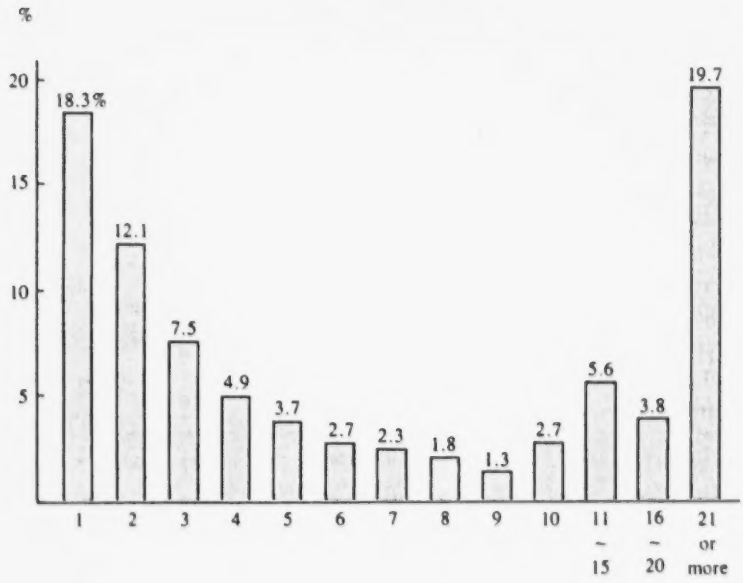


Table Four

Videodisc and Compact Disc Player Diffusion Rates by Facility

Facility	Videodisc Players	Compact Disc Players
Kindergartens	5.16%	0.80
Elementary Schools	7.37	2.51
Junior High Schools	6.98	4.06
Senior High Schools	8.31	9.65

VI. UTILIZATION OF AUDIOVISUAL MEDIA AND AIDS

1. Utilization by Teachers

The items included in this part of the survey were 16 mm projectors, slide projectors, overhead projectors, tape recorders, record players, TV receivers (off-air utilization only), videotape recorders, video cameras, group response analyzers, microcomputers, language laboratories and music laboratories. The results of the survey indicated that, generally speaking, tape recorders and overhead projectors were the most commonly used items (i.e., those with high percentages of users) in the schools.

A. Kindergartens

A rather high percentage of teachers use record players, tape recorders and slide projectors. Teachers in 60.8% of the kindergartens responding to this survey used record players while 54.2% of them used tape recorders. Both of these media also have high diffusion rates (record players, 89%; tape recorders, 94%). The percentage if kindergartens which reported that their teachers had used 16 mm projectors was actually higher than the percentage which reported they owned such equipment. This indicates that many kindergartens borrow 16 mm projectors as necessary.

B. Elementary Schools

High utilization rates were given for TV (off-air utilization), tape recorders and overhead projectors, all of which also have high diffusion rates. Of those elementary schools which replied, 46% of them said that all of their teachers had used TV (off-air utilization) the previous academic year.

C. Junior High Schools

Overhead projectors and tape recorders both had relatively high utilization rates at the junior high school level. However, in comparison to kindergartens and elementary schools, the percentage of schools which replied that all of their teachers were using these media was relative low. Compared to a TV receiver diffusion rate of 99%, the percentage of junior high schools which replied that their teachers had used TV (off-air utilization) was a surprisingly low 42%. It may be assumed that this difference reflects the recent increase in the use of videotaped programs.

D. Senior High Schools

At the senior high school level, videotape recorders, tape recorders and 16 mm projectors had relatively high utilization rates. Just as was the case at the junior high school level, the percentage which replied that all of their teachers were using these media was relatively low, at least in comparison to kindergartens and elementary schools. The percentage of teachers using microcomputers was higher than were the percentages of teachers using any other of the audiovisual media. The survey showed that microcomputers were being used by from 1 to 19% of the teachers in 41% of the senior high schools and by from 20 to 39% of the teachers in another 16%. Also, just as was seen at the junior high school level, the percentage of teachers using TV (off-air utilization) was relatively low in comparison to TV receiver diffusion rates. Again, this is thought to be due to the increased use of videotaped programs.

2. FREQUENCY OF UTILIZATION

In order to grasp the frequency with which various audiovisual media were being used, the survey also asked how frequently each teacher/employee used each piece of equipment. The responses were divided into (1) about once a year, (2) once or twice a month, (3) approximately once a week, and (4) more than twice a week. the following analysis is bases on responses only from those schools and facilities which indicated that their teachers or employees were actualy using the specific media.

A. Kindergartens

The most frequently used audiovisual aid at the kindergarten level is the record player. Approximately 66% replied that, on a per teacher basis, they were using record players twice or more a week. Results showed that TV (off-air utilization) and tape recorders were also being used rather frequently.

B. Elementary Schools

In the elementary schools, TV (off-air utilization) appeared to be the most frequently used media: 57% of the elementary schools reported that, on a per teacher bases, off-air TV programs were being used more than twice a week. Other media with high frequency rates included the record player, the tape recorder and the overhead projector. While the percentage of elementary schools which reported they were using music laboratories was very low, those which reported they were being used also reported that they were being used frequently. Nearly 70% of the elementary schools using music laboratories reported that they were being used at least once a week or more.

C. Junior High Schools

The most frequently used audiovisual media at the junior high school level was the tape recorder; 64% of the schools reported that the per teacher utilization frequency rate was twice a week of more. Other media with high frequency rates were the overhead projector and record player. while the percentage of schools which replied that they were using microcomputers was relatively low, those which were using them also indicated a high frequency of use. Approximately 51% of the teachers using them did so at least once or more each week.

D. Senior High Schools

The survey showed that the most frequently used media at the senior high school level included the tape recorder and the microcomputer. The frequency of utilization of microcomputers was particularly high, with 71% of all using schools reporting that the per teacher utilization rate was once or more each week. The senior high schools also reported that the frequency of use of videotape recorders was also rather high; 56% of all using schools replied that the per teacher utilization rate was once or more each week.

3. UTILIZATION BY SUBJECT MATTER

For elementary and junior and senior high schools, let us see the survey what subjects each of the audiovisual media included in the survey were most commonly used in.

The subjects each of the audiovisual media are commonly used are as follows.

Table Five

Most Popular Subjects for Using Overhead Projectors

Rank Order	Elementary Schools		Junior High Schools		Senior High Schools	
	Subject	Ratio	Subject	Ratio	Subject	Ratio
1	Arithmetic	46.5%	Social Studies	35.1%	Science	37.8%
2	Social Studies	32.5	Science	31.3	Social Studies	16.3
3	Science	10.0	Mathematics	11.9	Domestic Science	9.1
4	Japanese	7.1	Foreign Languages	9.4	Industrial Science	9.1
5	Morals	1.6	Industrial & Domestic Arts	5.5	Commerce	5.1
No. of Replies	2,402		1,027		728	

Table Six

Most Popular Subjects for Using Tape Recorders

Rank Order	Elementary Schools		Junior High Schools		Senior High Schools	
	Subject	Ratio	Subject	Ratio	Subject	Ratio
1	Music	53.2%	Foreign Languages	80.3%	Foreign Languages	78.8%
2	Japanese	28.9	Music	6.6	Special Activities	6.1
3	Physical Education	7.2	Japanese	3.6	Music	4.2
4	Special Activities	5.9	Special Activities	3.3	Physical & Health Ed.	3.0
5	Other	1.7	Morals	2.2	Japanese	2.3
No. of Replies	2,224		984		706	

Table Seven

Most Popular Subjects for Using Off-air Television

Rank Order	Elementary Schools		Junior High Schools		Senior High Schools	
	Subject	Ratio	Subject	Ratio	Subject	Ratio
1	Science	36.5%	Science	36.0%	Special Activities	22.1%
2	Morals	29.3	Special Activities	24.9	Social Studies	19.1
3	Social Studies	25.6	Other	14.9	Science	18.5
4	Special Activities	5.1	Social Studies	9.5	Health & Physical Ed.	11.8
5	Other	1.2	Morals	4.8	Other	9.4
No. of Replies	2,333		442		330	

Table Eight
Most Popular Subjects for Using Videotape Recorders

Rank Order	Elementary Schools		Junior High Schools		Senior High Schools	
	Subject	Ratio	Subject	Ratio	Subject	Ratio
1	Social Studies	27.6%	Science	46.7%	Special Studies	27.3%
2	Special Activities	25.7	Special Activities	14.8	Science	27.1
3	Science	21.9	Social Studies	13.4	Physical & Health Ed.	12.0
4	Physical Education	9.7	Health Education	11.2	Special Activities	10.6
5	Other	6.3	Other	3.3	Foreign Languages	4.5
No. of Replies	2,165		990		801	

Table Nine
Most Popular Subjects for Using Microcomputers

Rank Order	Elementary Schools		Junior High Schools		Senior High Schools	
	Subject	Ratio	Subject	Ratio	Subject	Ratio
1	Arithmetic	42.6%	Other	62.5%	Mathematics	26.3%
2	Other	31.8	Special Activities	18.8	Commerce	18.3
3	Special Activities	10.1	Mathematics	10.8	Other	16.9
4	Science	5.4	Science	4.5	Industry	14.2
5	Japanese	2.3	Industrial & Domestic Arts	2.3	Special Activities	9.4
No. of Replies	129		176		562	

(1) 16 mm projectors -- at the elementary, junior high and senior high school, special activities.
(2) slide projector -- at the elementary, junior high and senior high school, social studies.
(3) overhead projector -- at the elementary school, arithmetic. At the junior high school, social studies. At the senior high school, science.
(4) tape recorders -- at the elementary school, music. At the junior high and senior high school, foreign language.
(5) off-air television -- at the elementary and junior high school, science. At the senior high school, special activities.
(6) videotape recorders -- at the elementary school, social studies. At the junior high school, science. At the senior high school, social studies.
(7) microcomputers -- at the elementary school, arithmetic. At the senior high school, mathematics.

VII. PARTICIPATION IN VARIOUS TRAINING

The rate of teachers who had experiences to participate in the training or seminar on audiovisual education (broadcasting education, educational technology) and microcomuters are as follows. It is teachers of elementary school who most frequently participate in the training on audiovisual education, and it is teachers of the senior high school who most frequently participate in the training on microcomputers.

Table Ten

Percentage of participation in the training on AVE (elementary school)

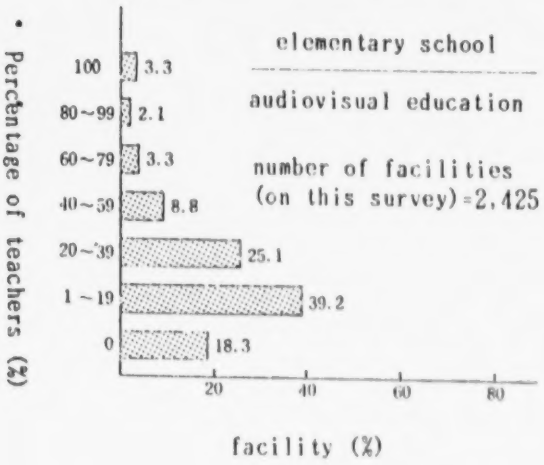
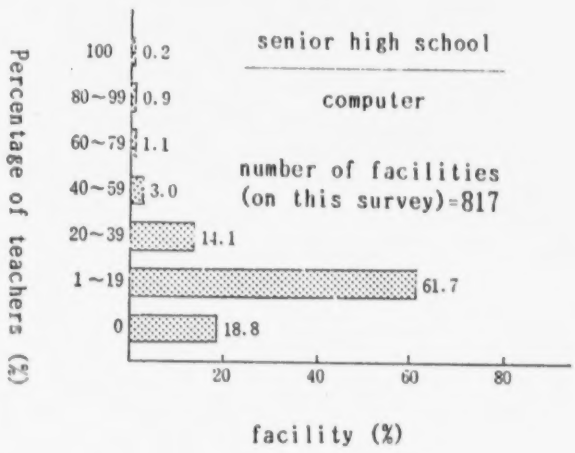


Table Eleven

Percentage of particiation in the training on microcomputer (senior high school)



VIII. LOCAL PRODUCTION OF MATELIALS

In the schools, overhead projector transparencies were the most frequently produced materials -- 91% at the elementary, 87% at the junior high and 69% at the senior high school.

Also, 51% of the senior high school reported that they prepared their own computer software.

Table Twelve

Percentages of Locally-Produced Materials

Facility	Media					No. of Responses
	Slides	OHP Trans-parencies	Video Tapes	Audio Tapes	Compu-ter Software	
Kindergartens	19.7%	40.5%	14.4%	17.4%	0.2%	620
Elem. Schools	52.0	90.7	64.7	53.9	5.2	2,425
Jr. Hi. Schls	44.6	86.8	59.0	44.7	11.8	1,057
Sr. Hi. Schls	52.8	69.2	65.9	37.9	50.7	817

Table 13 shows the average quantity of locally-produced items prepared by level of schools .

Table Thirteen

Average Number of Locally-Produced Materials

Facility	Media				
	Slides	OHP Trans-parencies	Video Tapes	Audio Tapes	Compu-ter Software
Kindergartens	3.9	9.2	4.5	9.5	1.0
Elem. Schools	4.8	62.4	7.5	14.6	4.2
Jr. Hi. Schools	4.2	75.3	9.3	13.6	5.1
Sr. Hi. Schools	6.0	56.8	13.4	12.6	10.8